federal register

Wednesday
September 26, 1979

Part VII

Department of Energy

Grant Programs for Schools and Hospitals and Buildings Owned by Units of Local Government and Public Care Institutions

DEPARTMENT OF ENERGY

10 CFR Parts 450 and 455

Grant Programs for Schools and Hospitals and Buildings Owned by Units of Local Government and Public Care Institutions; Regulatory Analysis

AGENCY: Department of Energy.

ACTION: Notice of Availability of Regulatory Analysis and Summary of Regulatory Analysis.

SUMMARY: The President, by Executive Order 12044, has directed agencies of the Executive Branch to conduct a Regulatory Analysis of regulations which they prepare that are likely to have a major economic impact. An objective of the Regulatory Analysis is to examine alternative regulatory provisions which might permit achievement of the regulatory goals at a lower cost.

In keeping with these objectives, the Department of Energy has prepared a Regulatory Analysis of its rules to implement Title III, Parts 1 and 2 of the National Energy Conservation Policy Act (NECPA). The rules provide for Grant Programs for Schools and Hospitals and Buildings Owned by Units of Local Government and Public Care Institutions to assist schools and hospitals, local government and public care institutions in identifying and implementing energy conservation maintenance and operating procedures and in evaluating energy conservation measures and to assist schools and hospitals in acquiring and installing energy conservation measures.

Pursuant to the regulations published in the **Federal Register** on April 2, 1979 (44 FR 19340) and on April 17, 1979 (44 FR 22940), this Summary of the Regulatory Analysis is published subsequent to publication of those rules.

ADDRESSES: A copy of the complete Regulatory Analysis may be obtained by contacting:

Mr. Ronald Milner, Office of State and Local Programs, Department of Energy, Room 2H043, Forrestal Building, 1000 Independence Avenue, S.W., Washington, D.C. 20585, (202) 252–2325.

Copies of this summary and of the complete Regulatory Analysis are available in the Freedom of Information Reading Room, Department of Energy, Room GA–142, Forrestal Building, 1000 Independence Avenue, S.W. Washington, D.C. 20585.

FOR FURTHER INFORMATION CONTACT: Mr. Ronald Milner, (202) 252–2325.

Summary of Regulatory Analysis

I. Statement of Problem

The rapid rise in energy demand and costs since the beginning of the decade has interfered with the ability of many public institutions to provide services to their constituencies. As part of a comprehensive effort to deal with the national energy crisis, Congress established a program under Title III of the National Energy Conservation Policy Act (NECPA) to aid service institutions in their efforts to conserve energy.

The legislation authorized 3-year funding of $900 million in matching grants for schools and hospitals, and 2-year funding of $65 million in matching grants for public care facilities and local government buildings. The financial assistance outlined in the Act funds four program activities: preliminary energy audits (PEA), energy audits (EA), technical assistance programs (TA), and energy conservation measures (ECM). To implement these activities, the Act provides for grants to States as well as to eligible local governments and institutions. Schools and hospitals may qualify for all four activities, but local governments and public care institutions are eligible only for PEA, EA, and TA.

Preliminary energy audits (PEA), which provide basic buildings data, including the identification of major energy using systems, will be implemented through grants to States. The information and data obtained through the preliminary energy audit is intended to serve as the basis for subsequent program decisions and development of the State Plan.

Energy audits (EA) include the identification of operations and maintenance procedures that can be undertaken to reduce energy use or the rate of growth in energy consumption. EAs provide information necessary to identify buildings most in need of TA grants or most likely to benefit from additional conservation actions. Energy audits will be implemented through grants to States.

Technical assistance (TA) programs, which involve detailed analyses by professional engineers or architect-engineer teams or other technical professionals qualified pursuant to the State Plan, provide the economic and energy saving assessments of energy conservation measures for schools, hospitals, public care institutions or to buildings owned by local governments. All of the above institutions who qualify are eligible for TA grant awards.

Energy conservation measures (ECM) grants will provide financial assistance for the acquisition and installation of energy conservation measures such as insulation, storm windows and doors, multi-glazed windows and doors, caulking, automatic energy control systems, solar heating and cooling systems and others. The grants are made to schools and hospitals only based on provisions in the relevant State Plan and as a result of technical assistance programs undertaken by the institution.

II. Objectives of the Program

The major objectives of the NECPA grant programs are two-fold:

- Save energy and reduce the associated costs to institutions; and
- Facilitate and encourage the shift from scarce energy resources such as petroleum products, to renewable energy resources, such as solar.

There are certain additional program objectives which were determined by DOE in developing regulations to implement the legislation. These program objectives together with the overall policy objectives cited above, are the standards used in analyzing the effects of the regulations. The program objectives include:

- Maximize the participation of eligible institutions;
- Minimize the costs of administering the program to the States and the institutions; and

Ensure that special consideration is provided to those institutions most in need which would not otherwise be able to participate.

III. Alternatives to the Program

As the price of energy rises, market forces themselves will provide more incentive to undertake energy-conserving actions. Many institutions have already begun conservation programs in response to rising energy prices. Public and private, non-profit institutions, however, often lack the resources, the expertise or the motivation necessary to undertake energy conserving actions. Consequently, many institutions may be unable or unwilling to take full advantage of the opportunities for energy conservation and the associated cost savings. The NECPA, Title III grant programs were designed to help overcome some of these obstacles by providing information and financial assistance to public and private, non-profit institutions.

There are Federal energy conservation programs which impact on institutions which were in existence prior to enactment of NECPA. If NECPA had not been funded or enacted, these programs would have been able, to a limited extent, to provide assistance to many of the institutions eligible for

funding under NECPA. However, the scope and/or funding of these programs is not *directly* aimed at the institutions funded by NECPA, and the impact on conservation and energy savings could not be expected to have the same projected impact.

IV. Regulatory Provisions

In developing the regulations, eight provisions having alternatives which could significantly alter the impact of the programs were considered. Each of the eight provisions are discussed below:

(a) *Allocation Formula.* The formula used to allocate funds among the States for the technical assistance programs and energy conservation measures is based on population, climate and fuel cost as required by NECPA. Specifically, the allocation formula is:

$$(1)\quad K = \frac{.07}{n} + .1\,\frac{(Sfc)}{Nfc} + .83\,\frac{(Sp)\ (Sc)}{NPC}$$

where Sfc=the average retail cost per million Btus of energy in the State's region
Nfc=the summation of Sfc numerators for all States
n=number of eligible States
Sp=population of State
Sc=sum of the State's heating and cooling degree-days
NPC=sum of Sp×Sc for all States

The purpose of this allocation formula is to distribute available funds among the States according to the relative energy needs of the institutions within the States as required by the law. NECPA specified that population be considered since it correlates with the numbers of institutions in the States. Climate was specified since it correlates with the level of energy use in those buildings. DOE chose to use the product of population and climate rather than incorporate them as separate additive factors. The product of population and climate is believed to better reflect the relative energy needs of institutions within the States by jointly favoring States having institutions with high levels of energy use and States having large numbers of institutions.

In designing the allocation formula, DOE could have chosen to place greater emphasis on cooling degree-days to reflect that more energy is expended in providing a degree of cooling than is expended in providing a degree of heating. DOE could have also chosen to place more emphasis on heating to reflect that, for many applications, heating is more essential than cooling. DOE chose to consider heating and cooling degree-days equally in order that no one sector of the country would be unduly favored.

Other allocation formulae considered by DOE tended to widen the spread of allocation, favoring larger states at the expense of smaller ones. However, NECPA specified that no state could receive less than 0.5 percent of the total amount funded by the grant program. Therefore, the formula selected by DOE includes a factor .07/n to assure that the requirement is met.

(b) *Use of Simple Payback Methodology to Identify and Rank Eligible Energy Conservation Measures.* NECPA program success requires that all measures for which financial assistance is provided must be cost-effective. Therefore, an economic analysis was included as a factor for determining the eligibility of proposed energy conservation measures, and for ranking those measures for funding. Three alternatives were considered during the selection of an economic analysis methodology.

(1) Allow each State to specify the methodology to be used in that State;

(2) Specify simple payback as a ranking factor; and

(3) Specify another economic analysis methodology as a ranking factor.

The simple payback methodology was selected because it is widely used and understood and thereby should reduce the administrative burden placed upon applicants.

However, simple payback does not consider changes in non-energy related recurring costs (such as increases or decreases in operating and maintenance cost) resulting from a measure, price escalations, or discount rates. This may result in some measures appearing to be either more or less cost effective than would actually be the case. Also, simple payback considers only the energy savings accruing over the payback period and does not consider the total energy savings over the life of the measure. Therefore, simple payback does not differentiate between measures having long useful lives and greater cumulative energy savings and those having shorter useful lives and correspondingly smaller cumulative energy savings.

Therefore, DOE is considering the use of Life Cycling Costing (LCC) as the economic analysis methodology to be required for use in subsequent grant cycles of this program. LCC considers the time value of money, fuel price escalations and future operating, maintenance and other costs over the life of a project. Any such change in the specified methodology would customarily entail an amendment to the regulations.

(c) *Technical Assistance Analyst Qualifications.* NECPA directed that DOE provide guidelines for use by the States in identifying persons qualified to conduct technical assistance programs. In establishing the guidelines, DOE considered three alternatives:

(1) Provide only general guidelines and allow States maximum flexibility to qualify technical assistance analysts;

(2) Provide precise criteria and allow States no flexibility;

(3) Suggest the criteria but allow States to propose alternate criteria in their State Plan.

Due to the highly specialized nature of technical assistance programs, it is essential that only those individuals having the appropriate background, training and experience be considered as qualified technical assistance analysts. Therefore, alternate (3) was adopted, with the caveat that State's alternate criteria meet high standards.

(d) *Ranking Criteria.* NECPA directed DOE to provide guidelines describing the factors which States could consider in determining which applications would be given priority for financial assistance. Three alternatives were considered in determining the manner in which guidelines would be provided:

(1) Provide precise ranking criteria and allow States no flexibility in the ranking of applications;

(2) Provide general guidelines and allow States maximum flexibility; and

(3) Provide specific criteria but allow States to select the weights to be applied to each criterion.

DOE chose to provide specific criteria, listed according to their priority, in order to assure a standard basis upon which applications would be ranked and to assure that the criteria were consistent with National energy conservation goals. However, in consideration of the differing conditions which exist between States, DOE also chose to allow States to select the weights which would be applied to each criterion so that the States could take into consideration special conditions which may exist within their borders, and to allow the addition of other criteria if considered appropriate.

(e) *Hardship Provisions.* NECPA required that 10 percent of the funds made available for schools and hospitals for technical assistance and energy conservation measures be allocated for the purpose of making grants in excess of the 50 percent Federal share to those schools and hospitals determined to be in a class of severe hardship. In establishing the manner in which hardship would be determined, three alternatives were considered:

(1) Retain within DOE the 10 percent reserved for hardship grants and make all determinations regarding institutions' needs for financial assistance in excess of 50 percent;

(2) Allocate the funds reserved for hardship among States according to a separate formula and allow States to identify institutions eligible for hardship funding;

(3) Allocate all funds available for technical assistance and energy conservation measures, require States to reserve 10 percent of their allocations for hardship, and allow States to identify both the institutions eligible for hardship funding and to recommend to DOE the amounts for which they should be funded.

Since States are in a better position to identify those institutions which are in need of financial assistance in excess of 50 percent and to determine the minimum amounts necessary to enable them to participate in these programs, DOE chose alternative (3). [This will disadvantage states which have relatively more institutions which might qualify for hardship funding.]

(f) *BTU Conversion Factors.* In order to represent the total energy use of institutional buildings participating in the grant programs, and the overall energy savings resulting from the adoption of improved maintenance and operating procedures and the implementation of selected conservation measures, the rules require the use of specific factors to convert the standard physical units of fuels and electricity to their equivalent in British Thermal Units (Btus). These Btu conversion factors are set forth in section 450.42(a)(11).

After having identified the actual Btu content of petroleum products and the factors affecting the assumed Btu content of other fuels, DOE considered two alternatives:

(1) To specify the Btu conversion factors to be used under all circumstances, regardless of the actual Btu content of the fuels used in a particular building; or

(2) To specify the Btu conversion factors of only those fuels whose Btu content was uniform nationwide (petroleum products).

In order to ensure consistency in the data gathered under the program, DOE chose to establish specific conversion factors for all major energy forms used in buildings eligible for assistance under the program. This decision will result in some technical distortions at the local and State levels, but these distortions are expected to be generally very small and are not likely to have any significant affect on the distribution of funds.

(g) *State Administrative Cost Limits and Responsibilities.* In accordance with NECPA, State responsibilities include development of a State Plan, evaluation and ranking of grant applications, and program administration within the State. In selecting the limits to be placed on State administrative expense grants consistent with those responsibilities, DOE considered three alternatives:

(1) Provide States with a specified dollar amount for administrative expenses;

(2) Limit State administrative expense grants to a percentage of their allocation for technical assistance programs and energy conservation measures;

(3) Limit State administrative expenses grant to a percentage of the amounts granted for technical assistance programs and energy conservation measures in that State.

Since State expenses in the administration of the programs are generally related to the level of technical assistance and energy conservation measures activities in a State, DOE chose to limit administrative expenses grants to a percentage of the technical assistance and energy conservation measures applications funded. DOE reviewed the manner in which administrative costs are treated in other Federal grants programs to States. While treatment varies among agencies and in some cases, from program to program within a given agency, it is believed that the procedures set by these regulations will foster the objective of minimizing State administrative cost. In selecting this alternative, DOE considered various percentage limits. The 5 percent limit chosen is considered generally consistent with current practice, and will provide sufficient funds coupled with State matching funds to help defray State expenses in administering the program.

(h) *Reporting Requirements.* In determining the reporting requirements under these programs, DOE took into consideration the types of information required and reporting frequency necessary for effective program management, as well as the need to minimize the reporting burdens placed upon States and grantees.

Under the programs, grantees are required to submit semiannual progress and financial status reports; final reports upon completion of technical assistance programs or energy conservation measures; and, annual energy use reports for a minimum of three years following installation of energy conservation measures. States are required to submit semi-annual progress and financial status reports and annual reports containing estimates of energy use reductions resulting from implementation of energy conservation maintenance and operating procedures and installation of energy conservation measures. The information to be provided by these reports is considered to be the minimum necessary to enable DOE to carry out its program management responsibilities and to monitor program effectiveness.

V. Economic Impacts of the Program.

The economic impacts of these regulations at the national level and at the institutional level have been analyzed, and the results are as follows:

(a) National Economic Issues

1. *Employment.* The number of persons expected to be employed as a result of the programs is 13,750 or a very small fraction of the civilian labor force. The program is not expected to appreciably affect predicted unemployment rates.

2. *Gross National Product (GNP).* The total expenditures over a 3-year period for the technical assistance and energy conservation programs would be $1.85 billion or an average of $0.617 billion per year. Assuming that the GNP for 1979 is $2,000 billion, the expenditures of the programs would be .03 percent of GNP which is considered to be an insignificant amount.

3. *Private Domestic Investment.* The average investment per year for schools, hospitals, and local governments participating in the programs will be at most $0.308 billion (the investment required assuming no in-kind contribution). Total private domestic investment for the United States for 1978 was $345.6 billion. Average investment in the program is 0.09 percent of total private domestic investment, a relatively insignificant amount.

4. *Inflation.* Given the small relative expenditures involved in the technical assistance and energy conservation programs (an average of $0.617 billion per year), no immediate effects on price levels is expected. The long run effects of the programs on the price level involve more uncertainty. If energy price increases are greater than expected, cost savings derived from the program will increase. Under certain conditions (such as sharp increases in energy prices), the cost savings could be significant enough to have deflationary effects.

5. *Capital Markets and Interest Rates.* While forecasts of future interest rates vary, hospitals and schools that borrow to finance part of the expenditures on engineering analyses and energy

conservation measures can expect interest rates in the range of 10–12 percent.

The estimated amount of debt financing by hospitals, schools and local governments for these programs is $0.278 billion over a 3-year period, which is 30 percent of the expenditures by the institutions. The amount of financing needed will not affect interest rates.

6. *Energy Demand.* Energy consumption by schools and hospitals averages approximately 2.0×10^5 Btu's/sq. ft. per year. Energy used by primary and secondary schools was 104,445 Btu's/sq. ft. for 1977–78. Colleges and universities used 1.85×10^5 Btu's/sq. ft. in the academic year 1974–75. Energy usage by hospitals averaged 289,000 Btu's/sq. ft. in 1978.

Using these figures for energy usage per square foot and estimates of square footage for schools and hospitals, the estimated energy consumption per year is 1.01×10^{15} Btu's. This represents end-use and not primary energy consumption. An estimated 30.8 percent of building space, 2.19×10^9 sq. ft., will be affected by the program; this 2.19×10^9 sq. ft. corresponds to $.312 \times 10^5$ Btu's of energy use. Assuming a 25 percent savings in energy use, the estimated energy savings per year is $.078 \times 10^5$ Btu's.

(*b*) *Economic Issues at the Institutional Level*

1. *Capital Expenditure Requirements.* Hospitals, schools and local governments are expected to finance 25–30 percent of the expenditures required for the technical assistance and energy conservation programs by debt financing. The remaining expected sources of funds for the projects include equity and in-kind contributions.

2. *Effect of Regulation on Competition Among Architectural/Engineering Firms.* The technical assistance programs requires a technical assistance analyst(s) to perform an engineering analysis. This engineering analysis will normally be performed by an outside architectural and engineering group unless the school or hosptial has an especially strong engineering staff. Outside engineering groups will normally be architectural and engineering consultants but in some cases may be professors of nearby universities or local professionals who are willing to contribute services to the community.

An estimated 10–25 percent of the engineers working in energy-related areas are qualified to perform engineering analyses. There is funding for an average of 770 over a 3-year period for the technical assistance projects. The ratio of the number of qualified engineers to the number of positions funded could range from 5.65–14.13. [The effect on the program on A/E firms will be monitored as the program becomes operative.]

3. *Impact of the Program on Suppliers of Energy Conserving Equipment.* Most of the equipment, except for solar components, is manufactured by established firms. These supplies and equipment are standard materials used by the construction industry. Until the initial phases of program implementation are completed, it is impossible to assess the possible effects of the program on the overall demand for these supplies and equipment.

The solar equipment industry is in the initial stages of development. Even though the extent to which hospitals and schools will apply for grants to cover solar measures is uncertain, it is expected that the solar equipment needed can be obtained.

VI. Urban and Community Impact Analysis

The allocation formula targets proportionately higher rates of energy conservation expenditures to States and regions of the country which have high population densities and which experience long and severe winters. Thus per capita allocations of DOE grant awards differ between regions and States. The milder regions (III, IV, VI, and IX) receive the same or less than their population would indicate, while the colder regions (I, II, V, VII, VIII, and X) receive the same or more than their population alone would indicate.

The regulations make no provisions that States consider community type in the evaluation of applications. State energy agencies will rank all buildings in order of priority for funding. These priorities are established on the basis of energy conservation potential as indicated by energy audits.

Thus the program is aimed at conserving energy, *not,* for example, at changing employment patterns, nor revitalizing depressed communities. While there may be some positive impact on personal income, tax receipts, employment, or on urban renewal, such impact would very likely be only a modest incidence of the program.

Each State formulates and administers its own conservation program with DOE's approval. State energy agencies will receive, review and rank applications for financial assistance. The geographic distribution (urban vs. suburban vs. rural) that results depends on which buildings meet the criteria established by the States in accordance with the regulations and *not* necessarily on location of buildings. However, State programs *are* required to be operated so as to assure equitable distribution of available grant funds. While the condition of buildings (potential for energy savings) is very important, the willingness and ability of institutions to participate, as well as the number and extent of institutions requiring hardship funding in excess of 50 percent can also have an impact on priority rankings.

This program is to be administered by the State. Each State is required to formulate a State Plan for the operation of these grant programs which they will present to DOE for approval. Thus the plan reinforces the States' important role in managing Federal conservation programs at State and local levels.

State buildings unless they are schools and hospitals, are not eligible for this program. However, it is estimated that local governments may own or operate buildings totaling 1.4 billion gross square feet of floor space area and use about 0.25 quadrillion Btu's annually. The portion of the program addressing local government and public care buildings differs from the Schools and Hospitals portion in that grants can be used for audits and technical assistance, but not for energy conservation projects. Assuming that local government and public care buildings receive an equitable distribution of funds (which regulations require), there should be a relatively uniform distribution of beneficial impacts between urban, suburban and rural areas.

Issued in Washington, D.C. September 20, 1979.

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[FR Doc. 79-29802 Filed 9-25-79; 8:45 am]

BILLING CODE 6450-01-M